nearly four feet at the top, becoming narrower towards the base. Mr. Thompson has also observed the same phenomenon on sharp rocks and sticks. Ice-banners are evidently formed from the vapor of passing clouds; and an observer favorably situated might watch their formation and growth. He thinks that possibly the base of a cloud-banner might be found to be an ice-banner.

RECENT PROCEEDINGS OF SCIENTIFIC SOCIETIES.

American society of civil engineers.

April 16. — A paper was read by Hamilton Smith, jun., upon the temperature of water at various depths in lakes and oceans. The results of observations upon bodies of water in California, in the eastern states, and in Switzerland, were collated, and also the temperatures obtained in deep-sea soundings; all of which show that very slight variations in temperature occur at great depths, and also that great variations in surface-temperature affect the deeper waters only after a long interval, and that even in comparatively shallow reservoirs there is great uniformity in temperature, at even moderate depths, as compared with the variations in its surface.

Brookville society of natural history, Indiana.

April 8. — A. W. Butler presented a paper upon some explorations among the ruins of San Juan Teotihuacan, near the City of Mexico, illustrated by maps of that region, showing its topography. He described the appearance of the pyramids, the 'House of the sun,' and the 'House of the moon,' and gave the results of his investigations of the manner of their construction, and the excavations near them. A description of the so-called 'Micoatl,' 'Path of the dead,' and its relation to the 'House of the moon,' were given. In conclusion, he mentioned a large sacrificial stone found near the 'House of the moon,' which he illustrated by drawings of the front and top. —— Edward Hughes read a short paper upon the rats of Franklin county. —— A. W. Butler gave a short paper on the tornado of March 25, which he illustrated by maps, showing its course through the eastern part of Franklin county (Indiana), and the destruction it caused at Scipio, Ind.

Torrey botanical club, New York.

April 8. — Mr. Arthur Hollick read a paper upon autumn forms of the genus Viola. While engaged in studying the cleistogamous flowers of V. cucullata and V. sagittata, many other species were brought under notice, and important differences remarked in leaf, flower, and stem, which do not seem to have been previously reported. V. cucullata and V. sagittata are connected by every conceivable intermediate form of leaf variation and superficial characteristics, and V. palmata also connects with the former by insensible gradations. V. cucullata and its varieties are, however, distinguishable from either of the others mentioned by the decumbent habit of the cleistogamous flowers. In V. sagittata, on the other hand, the cleistogamous flowers are invariably erect. For some time it was difficult to know whether V. palmata was allied to V. cucullata or V. sagittata, but the appearance of the intermediate forms points to the former as the type. The three species of white violets — viz., V. blanda, V. primulaefolia, and V. lanceolata — are very closely allied, intermediate forms between the latter two being impossible to place accurately with either species. All three produce runners or stolons late in the season; but in V. blanda these runners are merely roots, being almost entirely under the surface of the ground, slender, and producing few or no leaves, and no cleistogamous flowers. The flowers grow from, or close to, the main root-stock, and are more or less decumbent. V. primulaefolia has the longest runners, some as much as twelve inches in length. They are comparatively stout, run along the surface of the ground, and are mostly leaf and flower bearing throughout. V. lanceolata will probably have to be referred to the same species as the latter. An important point to be noted is, that V. primulaefolia and V. lanceolata almost invariably grow in company with each other, while V. blanda generally occurs alone, and in different locations from the other two. These violets have three methods of propagation, — by petalous flowers in early spring, by apetalous flowers in the autumn, and by runners rooting at the nodes or joints. V. odorata produces both leafy runners and cleistogamous flowers; but the flowers are clustered around the main stem, instead of being on the runners. They are depressed upon short peduncles, and are sometimes almost subterranean. In V. canina, var. sylvestris, the cleistogamus flowers have peduncles not more than two inches long, generally less, while the others are from three to four inches in length. Also, while in the spring flowers only one starts from each axil, in the autumn forms there are usually two or more. V. pedata apparently never produces cleistogamous flowers, but very frequently blossoms a second time in the autumn. Specimens were collected as late as Nov. 5 in full bloom. —— A committee was appointed to prepare resolutions urging the necessity of legislative action in regard to the preservation of the Adirondack forests.

Colorado scientific society, Denver.

April 7. — The committee on artesian wells in the neighborhood of Denver made a preliminary report, outlining the basin within which the known flows might be obtained, and giving calculations as to the amount of water available. —— Mr. E. LeNeve Foster described a possibly new mineral from Mexico, having approximately the formula, $4\ Ag_2S\ .\ 6\ Pb\ S.\ 5\ Bi_2S_3$. It occurs as a massive cement to a granu-

lar mass of quartz, and may be a cosalite with about half its Pb replaced by Ag_2. —— Mr. A. H. Low described a new modification of the battery method for the estimation of copper, by which great accuracy in results is attained in from one to two hours. Substances which usually interfere with this process are either quickly removed, or their presence is rendered harmless by original methods. A full description of the process will soon appear.

Numismatic and antiquarian society, Philadelphia.

April 3. — Dr. Brinton spoke of some recent explorations made by him in the Trenton gravels, in search of the evidences of the existence of the palaeocystic man. —— Mr. Scott mentioned the fact that arrow-heads had been found at Otaheite, apparently of human manufacture, but which, upon investigation, turned out to be made by the action of the sands of the seashore under the influence of the winds. —— Mr. Barber exhibited a copper currency used by the Haidah Indians. It was a thin plate of worked copper in the shape of an axe-head, with a hole at each end, and some remarkable groovings. Its value was estimated at two dollars. They range in size from one inch to two feet.

NOTES AND NEWS.

THE following is a complete list of the papers read at the meeting of the National academy of sciences, April 15–18: — G. K. Gilbert, The sufficiency of terrestrial rotation to deflect river-courses: T. Sterry Hunt, The origin of crystalline rocks: Simon Newcomb, On the photographs of the transit of Venus taken at the Lick observatory: A. E. Verrill, Zoölogical results of the deep-sea dredging expedition of the U. S. fish-commission steamer Albatross: Ira Remsen, The quantitative estimation of carbon in ordinary phosphorus; Reduction of halogen derivatives of carbon compounds: Elias Loomis, Reduction of barometric observations to sea-level: C. S. Peirce, The study of comparative biography: C. S. Peirce and (by invitation) J. Jastrow, Whether there is a minimum perceptible difference of sensation: S. P. Langley, The character of the heat radiated from the soil: J. E. Hilgard, On the depth of the western part of the Atlantic Ocean and Gulf of Mexico, with an exhibition of a relief model; On the relative levels of the western part of the Atlantic Ocean and Gulf of Mexico with respect to the Gulf Stream; Account of some recent pendulum experiments in different parts of the world, made in connection with the U. S. coast and geodetic survey: E. D. Cope, On the structure and affinities of Didymodus, a still living genus of sharks of the carboniferous period; On the North-American species of mastodon: Theo. Gill and (by invitation) John A. Ryder, The characteristics of the lyomerous fishes; On the classification of the apodal fishes: Theo. Gill, On the ichthyological peculiarities of the bassalian realm: George F. Barker, On the Fritts selenium cell; On a lantern voltmeter: George J. Brush, On the occurrence of mercury in native silver from Lake Superior: H. A. Rowland, Progress in making a new photograph of the spectrum: B. Silliman, On the existence of tin ore in the older rocks of the Blue Ridge: H. M. Paul (by invitation), The Krakatoa atmospheric waves, and the question of a connection between barometric pressure and atmospheric electricity: John S. Billings, Memorandum on composite photographs in craniology: A. W. Wright, Some experiments upon the spectra of oxygen: Elliott Coues, On the application of trinomial nomenclature to zoölogy: E. M. Gallaudet (by invitation), Some recent results of the oral and aural teaching of the deaf, under the combined system: F. W. Clarke, (by invitation), Jade implements from Alaska: Henry L. Abbot, Recent progress in electrical fuzes: J. S. Diller (by invitation), The volcanic sand which fell at Unalashka, Oct. 20, 1883, and some considerations concerning its composition. The following biographical notices of deceased members were also read: of Gen. G. K. Warren, by H. L. Abbot; of Professor Stephen Alexander, by C. A. Young; of Dr. J. Lawrence Smith, by B. Silliman; and of Dr. John L. LeConte, by S. H. Scudder.

— Tornado circular xxi., just issued by the signal-service, accompanies a second series of preliminary tornado-charts, showing the local storms of March 11, in their relation to broad cyclonic circulation of the same date. Eight tornado-tracks are mapped, — one in southern Illinois, one in central Kentucky, the rest in Mississippi and Alabama, — all occurring between two and seven in the afternoon. Their attitude with regard to the centre of low pressure is much the same as was shown for the tornadoes of Feb. 19. They are from seven hundred to a thousand miles south by east of the cyclone centre, within the area of warm southerly winds, and just east of the area of cool north-westerly winds; the two being separated by strong thermal gradients. There were five persons killed and fifty wounded by these tornadoes. The loss would have been much more severe, had not the people secreted themselves in cellars and 'dug-outs' on the approach of the storms. A more detailed study is promised at a later date.

— Dr. G. Stanley Hall, the well-known writer and lecturer on philosophical and educational subjects, has been appointed professor of psychology and pedagogics in the Johns Hopkins university. Dr. Hall was graduated at Williams college, and at a later day received the degree of doctor of philosophy from Harvard college, and afterward prosecuted his studies in Germany under Ludwig and Wundt. His lectures have been sought for in many colleges, and his co-operation in educational associations has been highly prized. He has written for the *Princeton review*, *Mind*, *The nation*, and other periodicals; and many of his papers were collected and published in a separate volume. He is now engaged in a prolonged inquiry respecting the education of young children, from which important results are anticipated. He is a man of unusual aptitude and training; and his friends believe that in the chair to which he is now appointed he will exercise a strong influence for good,